

C. Huang et al.
U.S. Serial No. 09/823,176
Page 5 of 7

REMARKS

Claims 1-16 are pending in the application. Claims 1, 9 and 14 have been amended by the present amendment. The amendments are fully supported by the application as originally filed (see, e.g., specification at page 6, lines 14-16; page 7, lines 9-11; page 8, lines 4-6; and page 8, line 26 to page 9, line 2; see also FIGS. 2A-5B).

Applicants' claimed invention is directed to a substrate strip including: a frame having a pair of parallel supporting bars, and at least one substrate supported on the supporting bars, the substrate being linked to the supporting bars by means of no more than two tie bars, where at least one tie bar is arranged on a corner of the substrate (see claim 1). Similarly, claim 9 recites a substrate linked to the supporting bars by means of a two-point linkage structure consisting of just two tie bars, where at least one tie bar is arranged on a corner of the substrate and linked to one of the supporting bars (see claim 9).

As amended, independent claims 1 and 9 recite that at least two corners of the substrate are not provided with the tie bars, such that under high-temperature conditions, the substrate can freely expand toward the at least two corners to relieve thermal stresses (see page 6, lines 14-16; page 7, lines 9-11; and page 8, lines 4-6; see also FIGS. 2A-4B).

Independent claim 14 recites a substrate linked to the supporting bars by means of a one-point linkage structure consisting of just one tie bar, where the one tie bar is arranged on a corner of the substrate and linked to one of the supporting bars. As amended, independent claim 14 recites that three corners of the substrate are not provided with the tie bar, such that under high-temperature conditions, the substrate can freely expand toward the three corners to relieve thermal stresses (see page 8, line 26 to page 9, line 2).

Applicants' claimed substrate strip can provide significant benefits. Because at least two corners of the substrate are not provided with the tie bars, the substrate is unlikely to become warped during high-temperature fabrication steps, and the unwarped substrate allows a subsequently implanted ball grid array to have high coplanarity (see, e.g., page 6, lines 16-20).

C. Huang et al.
U.S. Serial No. 09/823,176
Page 6 of 7

Claims 1-6 and 9-13 were rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 5,925,934 to Lim in view of "admitted prior art (APA)" (hereinafter "APA"). Claims 7, 8, and 14-16 were rejected under 35 USC 103(a) as being unpatentable over Lim in view of "APA," and further in view of U.S. Patent 5,847,446 to Park et al. (hereinafter "Park"). These rejections are respectfully traversed.

Regarding the rejection of independent claims 1 and 9, on page 2 of the Office Action of 11/03/2005, it was admitted that "Lim does not teach that at least one external tie bar is arranged on a corner of the substrate."

APA was cited allegedly for teaching that external tie bars 13a-13d are formed at the corners of a substrate 11 (referring to PRIOR ART FIG. 1B).

As shown in FIG. 1B, the substrate 11 is linked to supporting bars 12a, 12b "by means of a four-point linkage structure consisting of four tie bars" 13a-13d on the four corners of the substrate 11 (see specification at page 2, lines 12-15). In other words, all corners of the substrate 11 are provided with the tie bars 13a-13d.

Because all corners of the substrate 11 are provided with the tie bars 13a-13d, during high-temperature fabrication steps, the substrate 11 cannot expand toward the corners thereof, causing thermal stresses to concentrate toward the center of the substrate 11, which would result in warpage of the substrate 11 (see specification at page 2, lines 18-26; FIG. 1C).

Therefore, even if APA were somehow combined with Lim, the result would be a substrate with all corners provided with tie bars.

Lim and APA, whether taken alone or in combination, do not teach or suggest that at least two corners of the substrate are not provided with the tie bars and allow the substrate to expand toward the at least two corners to relieve thermal stresses.

C. Huang et al.
U.S. Serial No. 09/823,176
Page 7 of 7

For at least the reasons discussed above, the proposed combination of Lim in view of APA does not teach or suggest the Applicants' claimed invention. Therefore, independent claims 1 and 9, and their respective dependent claims, are patentable over the proposed combination.

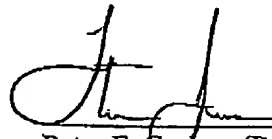
Regarding the rejection of independent claim 14, the Park reference was cited for teaching "the possibility of using at least one tie bar (122) that is attached to the chip pad (120)" (see Office Action at page 4, citing column 4, lines 22-34 and FIGS. 3-5 of Park).

However, neither Lim, APA, nor Park teach or suggest, whether taken alone or in combination, that the substrate is linked to the supporting bars by just one tie bar, and three corners of the substrate are not provided with the tie bar and allow the substrate to expand toward the three corners to relieve thermal stresses, as recited in claim 14.

Accordingly, independent claim 14 and its dependent claims are patentable over the combination of Lim in view of APA, and further in view of Park.

It is believed the application is in condition for immediate allowance, which action is earnestly solicited.

Respectfully submitted,



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